

Amendments to the Drawings:

The attached sheets of drawings include changes to Figs. 1 – 5. These sheets replace the original drawings of including Figs. 1 – 5.

REMARKS/ARGUMENTS

Claims 1 – 18 are presented for reconsideration and further examination in view of the foregoing amendments and following remarks. Claims 17 – 18 are newly added.

In the outstanding Office Action, the Examiner objected to the drawings for not including reference signs 12 and 14, which were mentioned in the specification; rejected claims 1 – 3, 6 – 16 under 35 U.S.C. §102(e) as being clearly anticipated by U.S. Patent No. 6,449,042 to Hamann (hereinafter referred to as “the Hamann ‘042 patent”); and rejected claims 4 and 5 under 35 U.S.C. §103(a) as being unpatentable over the Hamann ‘042 patent.

By this Response and Amendment,

the drawings have been amended to include reference numerals 12 and 14;

independent claims 1 and 13 have been amended to include the feature: “wherein a distance between the most remote said distinct locations is smaller than a lateral resolution of said apparatus,” and, as amended, the rejections to independent claims 1 and 13 and the rejections to the claims dependent thereon have been traversed; and

claims 17 and 18 have been newly added.

Support for amendments to claims 1 and 13 may be found in page 4, lines 1 – 3 of the originally filed specification. (Please note that the term “lateral resolution” is also defined in page 4, lines 4 – 6.) Further, support for new claims 17 and 18 may be found in page 5, line 20 to page 6, line 19 of the originally filed specification. Therefore, it is respectfully submitted that the above amendments and corrections do not introduce any new matter to this application within the meaning of 35 U.S.C. §132.

Objection to the Drawings

The Examiner objected to the drawings for not including reference numbers 12 and 14, which were mentioned in the specification.

Response

An Appendix, which begins on page 14 of this Response and Amendment, includes replacement sheets of drawing figures 1 – 5. The replacement sheets include the addition of reference numbers 12 and 14 as well as the addition of other reference numbers for consistency among figures.

Accordingly, reconsideration and withdrawal of the objection are respectfully requested.

Rejections Under 35 U.S.C. §102(e) and 103(a)

The Examiner rejected claims 1 – 3, 6 – 16 as being clearly anticipated by the Hamann '042 patent; and rejected claims 4 and 5 under 35 U.S.C. §103(a) as being unpatentable over the Hamann '042 patent.

Response

By this Response and Amendment, Applicants respectfully traverse the Examiner's rejections since all of the features of the independent claims, as amended, are not disclosed, taught, or suggested in the cited prior art.

For a reference to anticipate an invention, *all* of the elements of that invention must be present in the reference. The test for anticipation under section 102 is whether each and every element as set forth in the claim is found, either expressly or inherently, in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987); MPEP §2131.

To establish a prima facie case of *obviousness*, the Examiner must show that the prior art references teach or suggest all of the features of the presently claimed invention. *Amgen, Inc. v.*

Chugai Pharm. Co., 18 USPQ2d 1016, 1023 (Fed. Cir. 1991); *In re Fine*, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988); *In re Wilson*, 165 USPQ 494, 496 (CCPA 1970).

Amended independent claim 1 recites: “[a]n apparatus adapted for confocal imaging of a surface of a non-flat specimen, said apparatus having an optical axis and a predetermined lateral resolution and comprising a coherent light source for producing a light beam, imaging optics adapted to focus the light beam into at least one spot on a surface of a specimen, and a detector having an integration time and adapted to receive and detect light reflected from said surface; said imaging optics comprising at least one optical component located so that the light reflected from the specimen surface passes therethrough on its way to the detector, said optical component being movable so as to move the at least one spot, within a range of movement, to a number of distinct locations in a plane perpendicular to the optical axis, within said integration time of the detector, wherein a distance between the most remote said distinct locations is smaller than said lateral resolution.”

Amended independent claim 13 recites: “[a] method for confocal imaging of a non-flat specimen, the method comprising: providing an apparatus comprising a source of coherent light and a detector; focusing the coherent light into at least one spot on a surface of the specimen by means of imaging optics comprising a movable optical component; directing light reflected by the surface toward the detector via the movable optical component; detecting the light by the detector; and moving the movable optical component so as to move the at least one spot to a number of distinct locations within the integration time of the detector, wherein a distance between the most remote said distinct locations is smaller than a lateral resolution of said apparatus.”

As presently recited, independent claims 1 and 13 require that the path of the spot be moved on the surface of the specimen within a very small area, less than the lateral resolution of the apparatus, so that this motion does not in itself affect the parameter being measured by the apparatus

– the height of the specimen at the place illuminated by the spot. In other words, the objective being to measure the height of the specimen at a particular position on the surface illuminated by the spot, movement of the spot on the surface is so small that it is effectively at the same height position.

The Hamann '042 patent is directed to a backscattering apparatus that is used for optical scanning of particles suspended in a fluid medium. The scanning occurs along a circular path using optical illuminators and receivers. Essentially, one or more light beams are focused into one or more beam spots, and each common beam spot formed by the intersection of such beams (called a “measurement volume – 3” (column 2, lines 13 – 19 of the Hamann '042 patent)) is scanned along a circular path along the fluid medium, wherein backscattered light received during the scan is detected by means of detectors. An object, e.g., a particle, suspended in the medium that enters the measurement volume, is illuminated by the beams and light is scattered by the object in all directions, and part of the scattered light is directed to the detectors. As disclosed in column 2, lines 42 – 67 of the Hamann '042 patent, the dimension of the scanning volume 3 should be smaller than the size of the particles to be analyzed. Also, the circular path of the scanning volume will be significantly larger than the scanned particles, so much so, that the circular path of the volume 3 is approximately linear with respect to the particles. The length of a “chord,” the scanning path across such particles, is considerably smaller than the diameter of the aforesaid circular path, and it is the objective of the Hamann '042 patent to measure such chords, which are representative of the dimensions of the particles of interest.

In contrast to the presently claimed invention, the Hamann '042 patent does not disclose, teach, or suggest “a distance between the most remote said distinct locations is smaller than a lateral resolution of said apparatus.” The benefit of maintaining a distance between the most remote said distinct locations that is smaller than the lateral resolution of the apparatus is that a the detector does

not sense movement of the objective lens. Thus, to the detector, a number of samples of the *same* spot seem to be taken due to the inability of the detector to detect height differences within its minimum lateral resolution range. As such, the averaging of independent speckle configurations yields a relatively smooth optical section profile due to the repeated sampling of what is, ostensibly, the same spot, *see Present Application*, at page 7, lines 19 – 28.

Also, in contrast to the presently claimed invention the Hamann '042 patent is not directed to a confocal apparatus for imaging *per se*. Further in contrast to the present invention, the cited reference is directed to a fluid medium containing particles, which, when placed on a container, must be substantially flat.

Thus, even if the Examiner considers that the “specimen” of claims 1 and 13 of the present invention are analogous to a “particle” suspended in the fluid of the Hamann '042 patent, and even if it is assumed that the circular path only extends along the “chord” of one of these particles, it is still clear that the lateral dimension of the particle is the dimension of interest, and that this dimension is significantly greater than the lateral resolution of the apparatus, as otherwise the apparatus could not measure this dimension, rendering the apparatus and the US patent to Hamann meaningless.

When used for analysis of surface roughness, the detector according to the Hamann '042 patent receives light of varying intensity as the scanner rotates, and the measurement volume scans across a rough surface – in this case the intensity variations include information about the surface roughness of the scanned object along the circular scanned path (col. 5, lines 16 to 34). Thus, it is clear that the variation of the examined parameter (surface roughness) along the circular path is required to be known, and thus the magnitude of the surface roughness is significantly greater than the lateral resolution of the apparatus, as otherwise the apparatus could not measure this dimension, rendering the apparatus and the US patent to Hamann meaningless.

Thus, the cited Hamann '042 patent seeks to provide dimensional data, which is much smaller than the diameter of the circular path. Thus, the aforesaid diameter, which is analogous to the most distant remote locations of the optical path, is in fact much greater than the lateral resolution of the apparatus of the cited reference, since the apparatus can and should differentiate between different parts of an object that is located in the said circular path. Thus, the cited reference actually teaches away from the presently claimed invention since it does not disclose teach or suggest "a distance between the most remote said distinct locations is smaller than a lateral resolution of said apparatus" as recited in independent claims 1 and 13.

Similarly, the dependent claims are also not disclosed, taught or suggested by the Hamann '042 patent. In particular, column 5, lines 9 – 14 of the Hamann '042 patent (disclosing "scan[ning] across a path on a *flat* plane") actually teaches away from using a reflective element or a wedge shaped element, as claimed in claims 4 and 7 respectively of the present application.

Thus, the presently claimed invention is patentably distinguishable from the cited reference.

Accordingly, Applicants respectfully request that the Examiner reconsider and withdraw the outstanding rejections.

MISCELLANEOUS

Dependent claims 17 and 18 are asserted to be patentable over the cited prior art for at least the reason that they depend from amended independent claims 1 and 13 respectively. Claims 1 and 13 have been shown above to be patentable over the cited prior art for at least the reason that the cited prior art does not disclose, teach or suggest "a distance between the most remote said distinct locations is smaller than a lateral resolution of said apparatus."

CONCLUSION

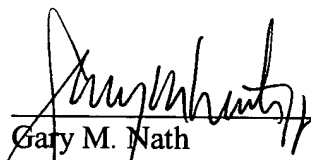
In light of the foregoing, Applicants submit that the application is now in condition for allowance. If the Examiner believes the application is not in condition for allowance, Applicants respectfully request that the Examiner contact the undersigned attorney if it is believed that such contact will expedite the prosecution of the application.

In the event this paper is not timely filed, Applicants petition for an appropriate extension of time. Please charge any fee deficiency or credit any overpayment to Deposit Account No. 14-0112.

Respectfully submitted,
NATH & ASSOCIATES PLLC

Date: July 12, 2005
NATH & ASSOCIATES PLLC
1030 Fifteenth Street, N.W.
Sixth Floor
Washington, DC 20005
(202) 775-8383

By:



Gary M. Nath
Registration No. 26,965
Jerald L. Meyer
Registration No. 41,194
Derek Richmond
Registration No. 45,771
Customer No. 20529